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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/023,023	11/28/2001	Charles A. Drake		2401

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EXAMINER	
ARNOLD JR, JAMES	
ART UNIT	PAPER NUMBER
1764	

DATE MAILED: 12/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/023,023	DRAKE ET AL.	
	Examin r	Art Unit	
	James Arnold, Jr.	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 November 2001*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Response to Amendment

The objections to claims 1, 10, 12, 13, and 15 have been overcome.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Drake et al. (USPN 6,083,379) in view of Clausen (Structure and Stability of Nitrided Alumina-Supported Mo Catalysts) and Wu et al. (USPN 6,162,352).

The Drake reference discloses a catalyst composition comprising a cobalt compound, a molybdenum compound, and an inorganic oxide compound that was previously sulfided. See Column 4, lines 20-55 and Column 5, line 24. The reference discloses a catalyst composition wherein said inorganic oxide compound is selected from the group consisting of silica, alumina, silica-alumina, magnesia, titania, zirconia, and mixtures of two or more thereof. See Column 4,

lines 20-55. The reference discloses a catalyst composition wherein said inorganic compound comprises gamma alumina. See Column 4, lines 49.

The Drake reference does not disclose the pre-nitriding of a catalyst composition comprising a cobalt compound, a molybdenum compound, and an inorganic oxide compound nor does it disclose the pre-nitriding of said composition before pre-sulfiding. The reference does not disclose a catalyst composition wherein the weight of the cobalt component of said cobalt compound as a percentage of the total weight of said catalyst composition is from about 0.1% to about 30%. The reference does not disclose a catalyst composition wherein the weight of the molybdenum component of said molybdenum compound as a percentage of the total weight of said catalyst composition is from about 1% to about 50%. The reference does not disclose a catalyst composition wherein the weight of the inorganic oxide compound as a percentage of the total weight of said catalyst composition is from about 10% to about 95%.

The Clausen reference discloses pre-nitriding before pre-sulfiding in an alumina supported Molybdenum catalyst. See Page 1, fourth paragraph. The Wu reference discloses a cobalt weight percent of from about 0.5 to about 50. See Column 8, lines 36-38. Wu discloses a molybdenum weight percent of from about 1 to about 50. See Column 8, lines 40-42.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of Drake to utilize pre-nitrided and pre-sulfided catalyst of Clausen because the catalysts of Drake and Clausen both are used for the purpose of hydrotreating and for removing impurities. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of Drake to utilize the cobalt weight percent of Wu in the range of from about 0.5 to about 50 because both the Wu and

Drake references disclose the use of cobalt in the catalyst composition and it would be appropriate to use cobalt in any weight percent rendering it effective. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of Drake to utilize the molybdenum weight percent of Wu in the range of from about 1 to about 50 weight percent because both the Wu and Drake references disclose the use of molybdenum in the catalyst composition and it would be appropriate to use molybdenum in any weight percent rendering it effective. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a catalyst composition wherein the weight of the inorganic oxide compound as a percentage of the total weight of said catalyst composition is from about 10% to about 95% because the Drake reference discloses the use of an inorganic oxide and it would be appropriate to utilize the inorganic oxide in any weight percent that renders it effective as a binder.

Claims 9-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu (USPN 6,162,352) in view of Clausen (Structure and Stability of Nitrided Alumina-Supported Mo Catalysts).

The Wu reference discloses a process of making a catalyst composition comprising contacting a cobalt compound and a molybdenum compound with an inorganic oxide compound to provide a cobalt/molybdenum modified catalyst and sulfiding the catalyst. See Column 8, lines 45-60. The reference discloses impregnating the inorganic oxide compound with an aqueous solution containing the cobalt compound and the molybdenum compound. See Column 8, lines 53-57. The reference discloses a cobalt compound weight percent in the range of from about 0.5 to about 50 and a molybdenum compound weight percent from about 1 to about 50.

See Column 8, lines 35-50. The reference discloses a process wherein an inorganic oxide compound is impregnated using an aqueous solution containing ammonium heptamolybdate and cobalt nitrate. See Column 5, lines 64. The reference discloses a process wherein the sulfiding is accomplished at least in part by contacting the cobalt/molybdenum catalyst with a decomposable sulfur compound, namely carbon disulfide, at a temperature of 380 C. See Column 6, lines 11-12. The reference discloses a process wherein the sulfiding is performed prior to contacting the catalyst with a sulfur containing hydrocarbon stream under hydrodesulfurization conditions. See Column 4, lines 60-63 and Column 8, line 60.

The reference does not disclose nitriding the cobalt/molybdenum catalyst. The reference does not disclose a process wherein nitriding is accomplished at least in part by contacting the cobalt/molybdenum modified catalyst with a decomposable nitrogen-containing compound at a temperature of from 650 C to 800 C. The reference does not disclose a process wherein the decomposable nitrogen-containing compound comprises ammonia. The reference does not disclose a process wherein nitriding is performed prior to contacting the cobalt/molybdenum catalyst with a sulfur-containing hydrocarbon stream under hydrodesulfurization conditions.

The Clausen reference discloses pre-nitriding an alumina supported molybdenum catalyst utilizing ammonia.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of Wu to utilize the ammonia based nitriding of Clausen because both the Clausen and Wu references utilize catalysts that are effective for the purpose of hydrotreating and for removing impurities. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a process wherein nitriding

is accomplished at least in part by contacting the cobalt/molybdenum modified catalyst with a decomposable nitrogen-containing compound at a temperature of from 650 C to 800 C because nitriding is disclosed by the Clausen reference and it would be appropriate to utilize any temperature needed for accomplishment of nitriding so that an effective catalyst composition is formed. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a process wherein nitriding is performed prior to contacting the cobalt/molybdenum catalyst with a sulfur-containing hydrocarbon stream under hydrodesulfurization conditions because Wu discloses a process whereby sulfiding is performed prior to contacting the catalyst with a sulfur containing hydrocarbon stream under hydrodesulfurization conditions and the Clausen reference discloses nitriding prior to sulfiding.

Response to Arguments

Applicant's arguments have been fully considered but are deemed unpersuasive. Applicant's election with traverse of Group I, claims 1-17 in the paper filed September 29.2003 is acknowledged. The traversal is on the ground(s) that the claims are so closely related as to be allowable in a single application. This is not found persuasive because all that is required for a restriction between a product and process of use is (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product. As discussed in the Office Action dated April 28, 2003, the process as claimed can be practiced with another materially different product such as a catalyst comprised of a metalliferous hydrogenation component on a substantially silica-free alumina hydrate.

The requirement is still deemed proper and is therefore made FINAL.

The applicant also requests reconsideration of the claim rejections under 35 U.S.C. 103(a). The applicant argues that Clausen is not combinable with Drake and the applicant states that Clausen notes "little is known about the transformation of the nitride structures and the structure and morphology of the resulting sulfide structure." The applicant, however, fails to also point out that in the fourth paragraph of the Clausen reference a catalyst that is both pre-nitrided and pre-sulfided shows an increase in absorbed species as compared to a similar catalyst that has been sulfided in the standard manner. Also, it is important to note that both pre-sulfiding and pre-nitriding are very well known in the art for various hydrotreating catalysts. Furthermore, both the catalysts of Drake and Clausen are effective hydrotreatment catalysts and therefore it would be appropriate to combine the references to include the pre-sulfiding and pre-nitriding of Clausen. Applicant also asserts that there is no suggestion in Drake to seek out the weight percentages of Wu. Drake and Wu, however, disclose catalyst compositions comprising cobalt, molybdenum, and inorganic oxides and it would be appropriate to use these effective catalytic components in any effective ratio. Furthermore, applicant has not shown any unexpected results or significant advantages of his instant disclosure utilizing applicant's claimed ratios as compared to the catalyst in Wu or Drake. Therefore, for at least the aforementioned reasons the Examiner maintains that the applicant's disclosure would have been obvious to one having ordinary skill in the art at the time the invention was made.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Arnold, Jr. whose telephone number is 703-305-5308. The examiner can normally be reached on Monday-Thursday 8:30 AM-6:00 PM; Fridays from 8:30 AM-5:00 PM with alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 703-308-6824. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0651.

ja
December 14, 2003

Walter D. Griffin
Primary Examiner